CBSE
Class X Science
Sample Paper 9

Time: 3 hrs **Total Marks: 80**

General Instructions:

(i) The question paper comprises four sections A, B, C and D. There are 36 questions in the question paper. All questions are compulsory.
(ii) Section–A - question no. 1 to 20 - all questions and parts thereof are of one mark each. These questions contain multiple choice questions (MCQs), very short answer questions and assertion - reason type questions. Answers to these should be given in one word or one sentence.
(iii) Section–B - question no. 21 to 26 are short answer type questions, carrying 2 marks each. Answers to these questions should in the range of 30 to 50 words.
(iv) Section–C - question no. 27 to 33 are short answer type questions, carrying 3 marks each. Answers to these questions should in the range of 50 to 80 words.
(v) Section–D – question no. - 34 to 36 are long answer type questions carrying 5 marks each. Answer to these questions should be in the range of 80 to 120 words.
(vi) There is no overall choice. However, internal choices have been provided in some questions. A student has to attempt only one of the alternatives in such questions.
(vii) Wherever necessary, neat and properly labeled diagrams should be drawn.

SECTION A

1. What is the basic difference between male and female germ cell? (1)

OR

State the condition necessary for germination of pollen grain.

2. In which part of the chloroplast do light and dark reactions take place? (1)

3. Why is potassium hydroxide used in photosynthesis experiments? (1)
(a) It reacts with carbon dioxide.
(b) It reacts with oxygen produced.
(c) It helps in destarching the leaf.
(d) It eliminates the interference of sunlight.

4. What are ionic compounds? (1)

5. Name the black substance of pencil. Will the current flow through the electrical circuit when we use the sharpened ends of the pencil to complete the circuit? (1)

6. Name the gas evolved when dilute HCl reacts with sodium hydro-carbonate. (1)

OR

How is the concentration of hydronium ions (H_3O^+) affected when the solution of an acid is dilute?

7. Name the Russian chemist who said that the properties of elements are a periodic function of their atomic masses. (1)

8. Name two elements whose properties were predicted on the basis of their positions in Mendeleev's periodic table. (1)

9. Why is diamond used for making cutting tools but graphite is not? (1)

OR

Which of the following molecule is called buckminsterfullerene?

C_{90} , C_{60} , C_{70} , C_{120}

10. What is the nature of the image when an object is placed at the centre of curvature in front of a convex lens? (1)

11. Draw the symbol used in drawing circuit diagram to represent open switch. (1)

OR

State the expression for electrical power in terms of potential difference and resistance.

12. If a ray of light goes from a rarer medium to a denser medium, will it bend towards the normal or away from it? (1)

OR

Name the phenomenon due to which a swimming pool appears less deep than it really is.

13. Name a device that helps to measure the potential difference across a conductor. (1)

For question numbers 14, 15 and 16, two statements are given—one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below.

a) Both A and R are true, and R is the correct explanation of the assertion.
b) Both A and R are true, but R is not the correct explanation of the assertion.
c) A is true, but R is false.
d) A is false, but R is true.

14. **Assertion**: Lymph is a light-yellow liquid which flows only in one direction. (1)
Reason: Lymph protects the body by making antibodies.

15. **Assertion**: In rainbow, light at the inner surface of the water drop gets internally reflected.
Reason: The angle between the refracted ray and normal to the drop surface is greater than the critical angle. (1)

16. **Assertion**: Steel is used in making the core of the electromagnet.
Reason: The core of the electromagnet must lose all its magnetism when the current in the coil is switched off. (1)

Answer Q. No 17 - 20 contain five sub-parts each. You are expected to answer any four subparts in these questions.

17. Read the following and answer any four questions from 17 (i) to 17 (v) (1×4)
Ruchi fixes a sheet of white cardboard sheet on a drawing board. She places a bar magnet in the centre of it. She sprinkles iron fillings uniformly around the bar magnet. Then she taps the board gently and observes that the iron fillings arrange themselves in particular pattern.

(i) What does the pattern shape look like?
   a) Straight lines
   b) Squares
   c) Closed curves
   d) Parallel lines

(ii) Why do iron fillings arrange in a pattern?
   a) Due to poles of magnet
   b) Due to force exerted by magnet within its magnetic field
   c) Due to repulsion between the poles and filings
   d) None of the above

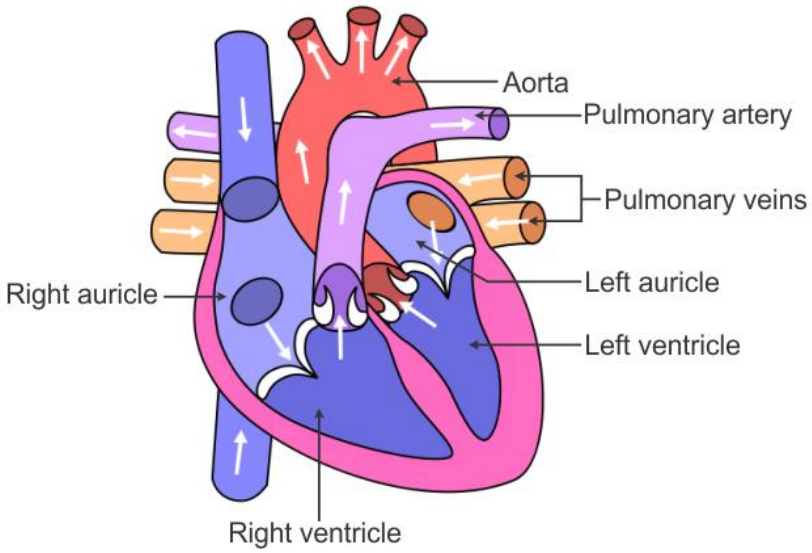
(iii) What do the lines along which iron filings align represent?
   a) Magnetic field lines
   b) Magnetic force
   c) Magnetic induction
   d) Magnetic susceptibility

(iv) What does the crowding of iron filings at the end of the magnet indicate?
   a) Magnetic field is weak at poles and stronger at middle
   b) Magnetic field is stronger at poles and weak at middle
   c) Magnetic field strength goes on decreasing from north to south pole
   d) Magnetic field strength goes on decreasing from south to north pole

(v) How the strength of magnetic field is indicated?
   a) Magnetic field strength cannot be indicated by magnetic field lines
   b) Far the magnetic field lines more is the magnetic strength
   c) Closer the magnetic field lines less are the magnetic field strength
   d) Closer the magnetic field lines more is the magnetic strength

18. Read the following and answer any four questions from 18 (i) to 18 (v). (1×4)

The human heart is an organ that pumps blood throughout the body via the circulatory system, supplying oxygen and nutrients to the tissues and removing carbon dioxide and other wastes.



(i) Which of the following does not form the heart layer?
   a) Pleural membrane
   b) Epicardium
   c) Myocardium
   d) Endocardium

(ii) The valve present between the right auricle and right ventricle is the
   a) Bicuspid valve
   b) Tricuspid valve
   c) Mitral valve
   d) Semilunar valve

(iii) From the left ventricle the blood is pumped through the
   a) Left auricle
   b) Aorta
   c) Pulmonary artery
   d) Pulmonary vein

(iv) Deoxygenated blood enters the right atrium through the
   a) Bicuspid valve
   b) Venacava
   c) Mitral valve
   d) Semilunar valve

(v) Blood pressure is measured using
   a) Oximeter
   b) Dialysing tube
   c) Stethoscope
   d) Sphygmomanometer

19. Read the following and answer any four questions from 19 (i) to 19 (v). (1×4)

Sample of five metals 'A', 'B', 'C', 'D' and 'E' was taken and added to the following solution one by one. The results obtained have been tabulated as follows.

Metal	$FeSO_4$	$CuSO_4$	$ZnSO_4$	$AgNO_3$	$Al_2(SO_4)_3$	$MgSO_4$
A	No reaction	Displacement	No reaction	Displacement	No reaction	No reaction
B	Displacement	Displacement	No reaction	Displacement	No reaction	No reaction
C	No reaction	No reaction	No reaction	Displacement	No reaction	No reaction
D	No reaction	No reaction	No reaction	No reaction	No reaction	No reaction
E	Displacement	Displacement	Displacement	Displacement	No reaction	No reaction

Use the above table to answer the following questions about the given metals.

i) Which of them is most reactive?
   (a) A
   (b) B
   (c) D
   (d) E

ii) What would you observe if 'B' is added to $CuSO_4$?
   (a) Reddish brown deposit
   (b) Grey deposit
   (c) Greyish silver deposit
   (d) Black deposit

iii) Arrange 'A', 'B', 'C', 'D' and 'E' in the increasing order of reactivity.
   (a) E>A>B>C>D
   (b) E>B>A>D>C
   (c) E>B>A>C>D
   (d) C>D>A>E>B

iv) Container of which metal can store zinc sulphate and silver nitrate solution?
   (a) A
   (b) B
   (c) C
   (d) D

v) Which of the above solution(s) can be stored in a container made of any of these metals?
   (a) Aluminium sulphates
   (b) Magnesium sulphates
   (c) Both (a) & (b)
   (d) None of these

20. Read the following and answer any four questions from 19 (i) to 19 (v). (1×4)

Rancidity: Rancidity can be defined as the chemical decomposition of fats and oils due to hydrolysis or auto-oxidation or microbial activity, producing aldehydes, hydroxyl acids, keta acids, and other compounds. This causes a considerable damage

to the natural structure of fats and oils, producing undesirable odors, flavors and discoloration in the food containing them; making them unfit for consumption.

For Example: When butter is kept open for a long time, then its smell and taste gets changed (due to the presence of butyric acid (a four-carbon acid)).

Factors responsible for causing rancidity are light, oxygen, trace elements such as iron and zinc, salt, water, bacteria, and molds etc.

Types of chemical reactions responsible for causing rancidity:

(i) Oxidation Reaction: Oxidation is said to have occurred when a substance reacts with oxygen in the air forming oxides. It causes the formation of peroxide at the double bonds (C=C) of fat molecules with subsequent breakdown of these peroxides to form aldehydes, ketones and acids of lower molecular weight. This results in off-flavor, off-odour and sometimes change in colour.

(ii) Hydrolysis: Hydrolysis can be defined as the breaking down of a chemical compound into two or more simpler compounds by reacting with water. It decomposes a lipid into its component fatty acids and glycerol.

Following are the methods for preventing rancidity of food: (write any three)

1. In order to prevent rancidity due to oxygen or water vapours present in a container, vacuum packing should be used or the packing should be filled with inert gases. For Example: Potato Chips are usually packed in thick foil packets filled with Nitrogen.
2. Refrigeration of foods also reduces the rate of most of the reactions that cause rancidity.
3. Reducing the water content in foods by drying or smoking and then storing them in a moisture free environment helps to reduce the chances of rancidity.
4. By adding anti-oxidants (butylated hydroxyanisole (BHA), butylated hydroxytoluene (BHT) to the food containing fats and oils.
5. Keeping food in air tight containers also helps to reduce oxidation.

i) All the methods mentioned below can be used to prevent the food from getting rancid except:
   (i) Storing the food in the air-tight containers
   (ii) Storing the food in refrigerator
   (iii) Keeping the food in clean and covered containers
   (iv) Always touching the food with clean hands
   (a) (i) and (ii)
   (b) (i) and (iii)
   (c) (i), (iii) and (iv)
   (d) (iii) and (iv)

ii) Which of the following gases is used in the storage of fat and oil containing foods for a long time?
   (a) Carbon dioxide gas
   (b) Nitrogen gas
   (c) Oxygen gas
   (d) Neon gas

iii) Rancidity of lipids of lipid-rich foodstuff is because of
(a) Reduction of fatty acids
(b) Hydrogenation of unsaturated fatty acids
(c) Dehydrogenation of saturated fatty acids
(d) Oxidation of fatty acids

iv) Which of the following chemical reactions responsible for causing rancidity?
(a) Reduction
(b) Oxidation
(c) Hydration
(d) Redox reaction

v) Which of the following is a food antioxidant?
(a) butylated hydroxyanisole (BHA)
(b) butylated hydroxytoluene (BHT)
(c) Saccharine
(d) Both (a) and (b)

SECTION B

21. An electrical appliance is rated 240 V–500 W. How much current will this appliance draw? It is planned to spend Rs 200 for running this appliance in a month. If the per unit cost is Rs 4.60, how many hours can this appliance be operated in a month of 30 days? (2)

OR

Draw a schematic labelled diagram of a closed circuit which connects all the given components in series and connected across a 12 V battery:
(i) 20 W lamp
(ii) An ammeter
(iii) A switch
(iv) 10 Ω/100 W resistor

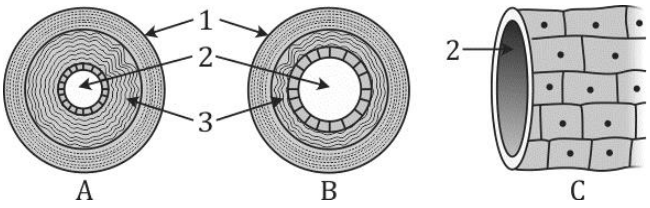
22. (a) A wall reflects light and a mirror also reflects light. What difference is there in the way they reflect light?
(b) Which type of reflection of light leads to the formation of images? (2)

23. What is saliva? State its role in the digestion of food. (2)

OR

How are the alveoli designed to maximise the exchange of gases?

24. The diagrams given below are cross-sections of blood vessels: (2)



(a) Identify the blood vessels A, B and C.

(b) Mention one structural difference between A and B. (1)

25. A shining metal 'X' on heating in air becomes black in colour. Name the black coloured compound formed and identify 'X'. (2)

26. Why do silver articles become black after some time? (2)

Section C

27. (3)

(a) What is an ecosystem? List the two main components of an ecosystem.

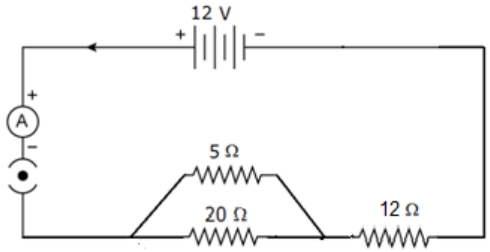
(b) We do not clean ponds or lakes on a regular basis, but an aquarium needs to be cleaned regularly. Explain.

OR

(a) Give two examples of decomposers present in an ecosystem.

(b) How is the presence of decomposers crucial in the ecosystem?

28. Three resistors of 5Ω, 10 Ω and 20Ω, respectively, are connected to a battery of 12 V as shown in the circuit given below. (3)



Calculate:

(a) Current through each resistor

(b) Total current in the circuit

Total resistance of the circuit

29. A 2 cm high object is placed at a distance of 20 cm from a concave mirror. A real image is formed at 40 cm from the mirror. Calculate the focal length of the mirror. Also, find the height of the image formed. (3)

30. How is sex determined in human beings? (3)

31. If you consume butter during lunch, how will it get digested in your body? (3)

32. What is regeneration? Explain regeneration in *Planaria* with the help of a diagram. (3)

33. (3)

(a) How does the metallic character of elements change along a period of the periodic table from the left to the right and why?

(b) In the modern periodic table, the element calcium (atomic number = 20) is surrounded by elements with atomic numbers 12, 19, 21 and 38. Which of these elements have physical and chemical properties resembling those of calcium and why?

Section D

34. (5)

(a) What is the difference between self and cross pollination?

(b) What happens to the pollen which falls on a suitable stigma?

OR

(a) State the role of the placenta in the development of the embryo.

(b) List four ways of preventing pregnancy. State two advantages of using such preventive methods.

35. Name the type of mirrors used in (a) a search light and (b) rear-view mirror. Draw labelled diagrams to show the formation of an image in each of these two cases. Which of these mirrors could also form a magnified and virtual image of an object? Illustrate with the help of a ray diagram. (5)

36. (5)

(a) What is a salt? Give the names and formulae of any two salts. Also, name the acids and bases from which these salts may be obtained.

(b) What is meant by 'a family of salts'? Explain with examples.

(c) What is meant by 'hydrated' and 'anhydrous' salts? Explain with examples.

(d) Write the names, formulae and colours of any two hydrated salts.

(e) What will be the colour of litmus in an aqueous solution of ammonium chloride salt?

OR

(a) Write word equations and then balanced equations for the reaction taking place when

(i) Dilute sulphuric acid reacts with zinc granules.

(ii) Dilute hydrochloric acid reacts with magnesium ribbon.

(b) What is a neutralisation reaction?

(c) Give two important uses of washing soda.

CBSE
Class X Science
Sample Paper 9 – Solution

SECTION A

1. The male germ cell is motile while the female germ cell is non-motile.

OR

Pollen grain germinates only if it has fallen on the stigma of the same plant species, or else it decomposes.

2. Light reaction of photosynthesis take place in the thylakoids while the dark reaction take place in the stroma or matrix of the chloroplast.

3. (a) It reacts with carbon dioxide.
Potassium hydroxide reacts with carbon dioxide and uses it up. Hence, the air is free of carbon dioxide in experiments determining the role of carbon dioxide in photosynthesis.

4. These are the compounds in which the constituent particles are ions (cation and anions) attracted to each other by strong forces of attraction.

5. Graphite
Yes, current will flow through the circuit since graphite is a good conductor of electricity.

6. Carbon dioxide (CO_2) gas is evolved during the reaction.

OR

On diluting an acid, the concentration of hydronium ions (H_3O^+) in it decreases.

7. Mendeleev said that the properties of elements are a periodic function of their atomic masses.

8. Gallium and Scandium.

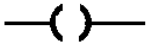
9. Diamond used for making cutting tools but graphite is not because diamond is a very hard substance and graphite is a soft substance.

OR

C_{60} is called buckminsterfullerene

10. When the object is placed at the centre of curvature in front of the convex lens, the image formed is real, inverted and of the same size of the image.

11. Open switch is represented as follows: -



OR

Electrical power, $P = \frac{V^2}{R}$

12. It will bend towards the normal.

OR

Refraction of light.

13. Voltmeter

14. b) Both A and R are true, but R is not the correct explanation of the assertion.
Lymph is a light-yellow liquid. It is a medium of circulation in human body which flows only in one direction - from body tissues to the heart. It is nutritive and protective in function.

15. b) Both A and R are true, and R is the correct explanation of the assertion.
Rainbow is formed when the light at the inner surface of the water drop gets internally reflected. If the angle between the refracted ray and normal to the drop surface is greater than the critical angle.

16. c) A is false, but R is true.
Soft iron is used in making the core of the electromagnet because soft iron loses all its magnetism when the current passing through is switched off.

Section B

17.

(i) c) closed curves
The iron filings arrange themselves in the pattern of closed curves

(ii) b) Due to force exerted by magnet within its magnetic field
Iron filings arrange themselves in particular pattern due to the force exerted by the magnet within its magnetic field.

(iii) a) Magnetic field lines
The magnetic field lines represent magnetic field lines.

(iv) b) magnetic field is stronger at poles and weak at middle
Crowding of the iron filings at the end of the magnet indicates that the magnetic field is strongest near the poles of the magnet and less at the middle of the magnet.

(v) d) Closer the magnetic field lines more is the magnetic strength

The strength of magnetic field is indicated by the closeness of the magnetic field lines. Closer the lines more is the strength of magnetic field and farther the lines indicate less is the magnetic field strength at that particular point.

18.

(i) a) Pleural membrane surrounds the lungs.
(ii) b) The valve present between the right auricle and right ventricle is the tricuspid valve.
(iii) b) From the left ventricle the blood is pumped through the aorta to different parts of the body.
(iv) b) Deoxygenated blood enters the right atrium through the venacava.
(v) d) Blood pressure is measured using sphygmomanometer.

19.

i) (d) E is most reactive. Because it react with most substances.
ii) (a) Reddish brown deposit of copper will be formed since displacement has taken place.
iii) (c) E>B>A>C>D reason: The more it reacts the more reactive it is. Just count a number of displacements a metal will give.
iv) (d) Container of metal D can be used for this purpose as it does not react with any of them.
v) (c) Aluminium and magnesium sulphates can be used to store in any container because the react with none.

20.

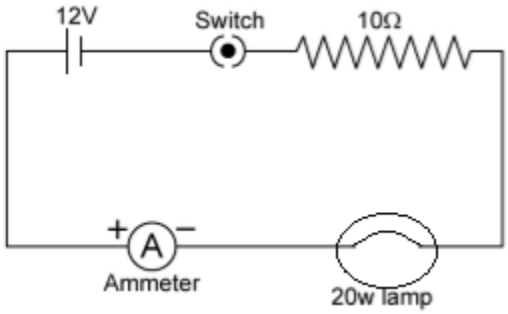
i) (d) Keeping the food in clean and covered containers and always touching the food with clean hands are not the methods to keep food safe from getting rancid.
ii) (b) Nitrogen gas is used in the storage of fat and oil containing foods for a long time.
iii) (d) Rancidity of lipids of lipid-rich foodstuff is because of oxidation of fatty acids.
iv) (b) Oxidation and hydrolysis reactions are responsible for causing rancidity.
v) (d) By adding anti-oxidants (butylated hydroxyanisole (BHA), butylated hydroxytoluene (BHT) to the food containing fats and oils.

SECTION B

21. Let running time per day be n hours.
Running cost for 30 days = n × 0.5 × 4.60 × 30 = 200
Hence, n = 200/ (0.5 × 4.60 × 30) = 2 hours 54 minutes.

OR

Circuit diagram:



22. (a) A wall has a rough surface, so the reflection by a wall is a diffuse reflection. A parallel beam of light incident on it is reflected in different directions.
A mirror surface is smooth, so the reflection by a mirror is a regular reflection. A parallel beam of light incident on it, gets scattered by making reflected rays in different directions.
(b) Regular reflection

23. Saliva is a watery fluid secreted by the salivary glands in the mouth. The digestive functions of saliva include moistening food, and helping to create a food bolus, so it can be swallowed easily. Saliva contains the enzyme amylase that breaks some starches down into maltose and dextrin.

OR

Alveoli are small pouches or sacs like structure. They are surrounded by blood capillaries. Thus a large amount of air is brought in contact with the air in the lungs. More than millions of alveoli are present in the lungs. The presence of millions of alveoli in the lungs provides a very large surface area for the exchange of gases. The availability of large surface area maximises the exchange of gases.

24.
(a) A – Artery, B – Vein, C – Blood capillary
(b) Structural difference between A (artery) and B (vein):

A (Artery)	B (Vein)
Valves are not present.	Valves are present.

25. The black coloured compound is copper (II) oxide or cupric oxide. The metal 'X' is copper.

$$CuO(s) + O_2(g) \xrightarrow{\text{Heat}} \underset{\text{(Black)}}{2CuO}$$

26. Traces of hydrogen sulphide (H_2S) gas are present in air/atmosphere. It slowly reacts with silver to form silver sulphide which is black. As a result, silver ornaments lose their shine after sometime

Section C

27.

(a) An ecosystem is a self-sustaining system where the two main components—biotic and abiotic components—of various communities live together and interact with each other.

The biotic system consists of all the living organisms of a particular area including humans, animals etc. The abiotic system consists of the non-living components including air, minerals, soil, water and sunlight.

(b) A pond is an example of a natural ecosystem, whereas an aquarium is an example of an artificial ecosystem. Ponds do not need to be cleaned on a regular basis because they have natural flora and fauna present in them which helps in cleaning the pond ecosystem. However, an aquarium does not contain soil and decomposing bacteria which help in degrading complex organic substances into simpler inorganic substances. Therefore, an aquarium needs to be cleaned regularly.

OR

(a) Bacteria and fungi are examples of decomposers present in an ecosystem.

(b) Decomposers breakdown or decompose the dead remains of plants and animals and their waste organic products into simpler, inorganic substances. The latter are released into the environment for their reuse as raw materials by producers. Thus, decomposers provide space for new life to settle in the biosphere. Hence, their presence is crucial to the functioning of the ecosystem.

28. Effective resistance for the parallel combination of 5 Ω and 20 Ω is given by

$\frac{1}{R} = \frac{20+5}{20\times5}$, R=4

Hence, total resistance in the circuit 12 + 4 = 16 Ω.

Current drawn from the battery = 16/12 = 4/3 = 1.33 A

(a) Potential difference across the parallel combination of resistors is (4/3) × 4 = (16/3) V.

Hence, current through 5 Ω resistor is (16/15) A and current through 20 Ω resistor is (16/60) = (4/15) A.

(b) Total current drawn from the battery (4/3) = 1.33 A

(c) Total resistance in the circuit 12 + 4 = 16 Ω

29. Given:

Object distance, u = −20 cm

Image distance, v = −40 cm

Height of object (h_0) = 2 cm

According to the mirror formula,

$$\frac{1}{v}+\frac{1}{u}=\frac{1}{f}$$

$$\frac{1}{-40}+\frac{1}{-20}=\frac{1}{f}$$

$$\frac{1}{f}=\frac{-1-2}{40}$$

$$f=-\frac{40}{3}=-13.33\ cm$$

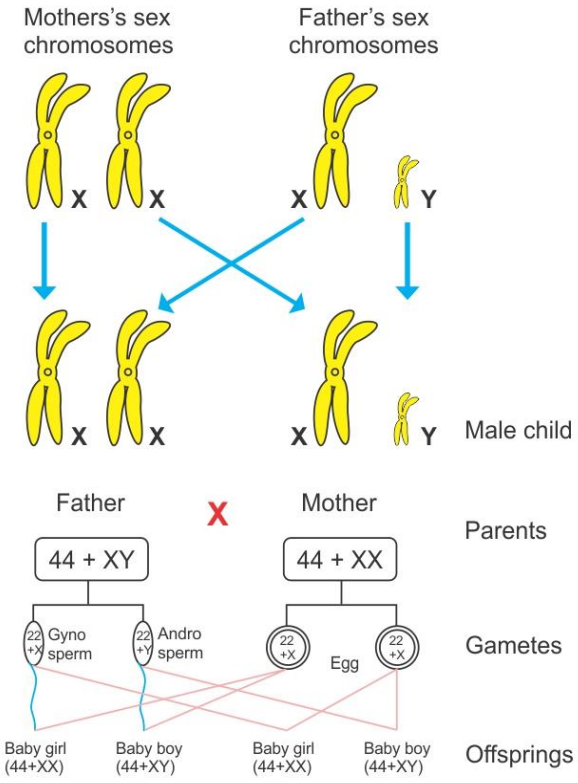
$$magnification,\ m=-\frac{v}{u}=\frac{h_i}{h_0}$$

$$m=-\frac{-40}{-20}=\frac{h_i}{2}$$

$$h_i=-4\ cm$$

30. <u>Sex determination in human beings:</u>

- Human males possess one X chromosome and one Y chromosome (XY) in their cells. Therefore, half of the male gametes or sperms will have X chromosomes and the other half will have Y chromosomes.
- Human females have two X chromosomes (XX) in their cells. Therefore, all the female gametes or ova always have X chromosomes.



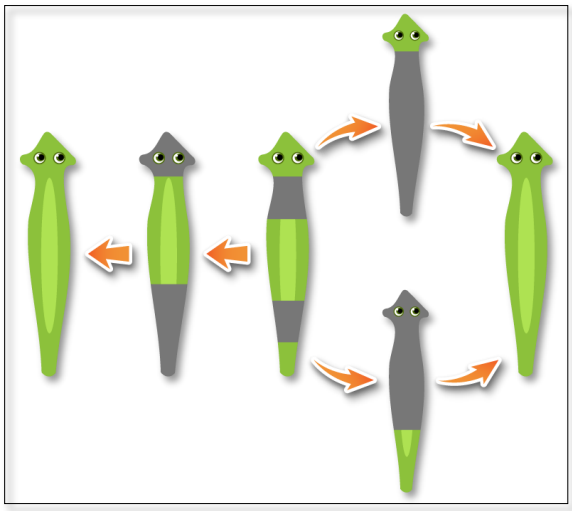
- If a sperm carrying an X chromosome fertilises an ovum which always carries the X chromosome, then the combination of sex chromosomes will be XX, and hence, the child born will be a female (girl).

- If a sperm carrying the Y chromosome fertilises an ovum, then the combination of sex chromosomes will be XY, and hence, the child born will be a male (boy).
- Thus, the male (father) is responsible for the sex of the baby.

31. Butter consists of fat, which is digested by bile released from the liver.

- Fats are present in the intestines in the form of large globules, making it difficult for enzymes to act on them.
- Bile salts present in the bile break fats into smaller globules to increase the action of enzymes. This process is known as emulsification.
- Later, lipase acts on the emulsified fats and breaks them down into fatty acids and glycerol.

32. Regeneration is the ability of an organism to grow into a complete individual when its body is divided into pieces. It can be seen in *Hydra* and *Planaria*.



Regeneration in *Planaria*

Regeneration is carried out with the help of specialised cells called regenerative cells. These cells proliferate and produce a large number of cells. From this mass of cells, different cells undergo changes to become various cell types and tissues. These changes take place in an organised sequence referred to as development.

33.

(a) The metallic character decreases from left to right along a period of the periodic table because on moving from left to right, the size of the atoms decreases and the nuclear charge increases. Hence, the tendency to release electrons decreases. Thus, the electropositive character decreases.

(b) Ca: Electronic configuration: 2, 8, 8, 2

The physical and chemical properties of elements with atomic number 12 and 38 will resemble those of calcium.

This is because they all belong to the second group and all of them have two electrons in the valence shell.

Section D

34.

(a) Self-pollination is transfer of pollen grains from the anther to the stigma of the same flower (e.g., *Commelina*, wheat) while cross pollination is transfer of pollen grains from the anther of one flower to the stigma of another flower of the same species (e.g., *Salvia*).

(b) After falling on a suitable stigma the pollen absorbs water and nutrients. It produces a pollen tube that grows through the style and reaches the ovary. Its tip contains a tube nucleus and two male gametes. The pollen tube enters an ovule, strikes against one synergid of the embryo sac and bursts open to release its contents. One male gamete fuses with the egg to form zygote while the other fuses with secondary nucleus to produce primary endosperm nucleus.

OR

(a) Placenta is a disc-like tissue which develops between the uterus wall and the embryo.

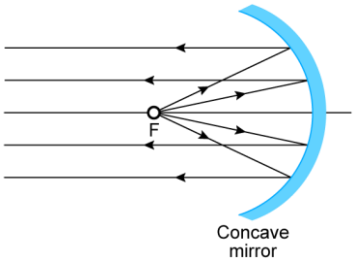
Role of placenta:

- Exchange of water between the mother and the foetus
- Exchange of nutrients
- Exchange of respiratory gases
- Removal of nitrogenous wastes from the foetus. Nitrogenous wastes cross the placenta and are removed through the mother's kidneys.
- Antibodies cross the placenta and provide immunity to the baby

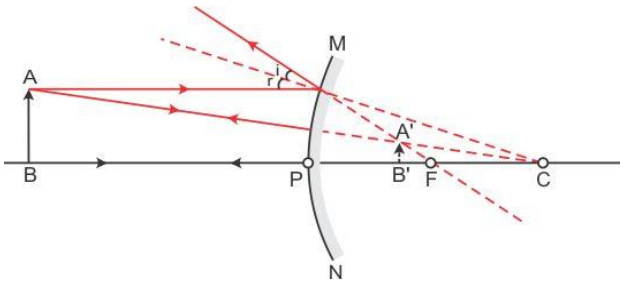
(b) Ways of preventing pregnancy:

- Natural method: The sexual act is avoided from day 10 to day 17 of the menstrual cycle, i.e. during the period ovulation is expected.
- Barrier methods: The fertilisation of ovum and sperm is prevented with the help of physical devices (condom and diaphragm).
- Oral contraceptives: Tablets or drugs are taken orally. These contain small doses of hormones which prevent the release of eggs and prevent fertilisation.
- Intrauterine contraceptive devices: Contraceptive devices such as Copper-T rods are placed in the uterus to prevent pregnancy.

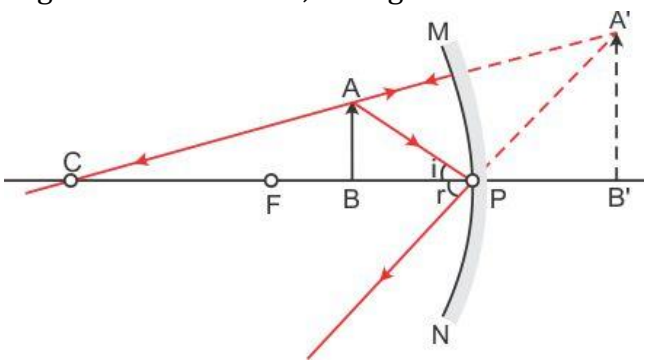
35. The mirror used in a searchlight is a concave mirror. A light source is placed at the focal point of the mirror. Light rays from the source are reflected by the mirror and all the reflected rays are parallel so that they travel a long distance to help in search operations.



The mirror used as a rear-view mirror is a convex mirror.
Image formed by a convex mirror:



A concave mirror can form a magnified and virtual image. A convex mirror cannot form an enlarged image. When the object is placed between the pole and the focus of the mirror, the image formed is virtual, enlarged and erect.



36.

(a) A salt is a compound formed from an acid by the replacement of the hydrogen in the acid by a metal.
Example: Sodium chloride (NaCl) is obtained from hydrochloric acid and sodium metal.
Ammonium chloride (NH_4Cl) is obtained from ammonia and hydrochloric acid.

(b) Salts having the same positive ions are said to belong to a family of salts.
Example: Sodium chloride and sodium sulphate belong to the same family of salts called sodium salts.

(c) Salts which contain water of crystallisation are called hydrated salts.
Example: Copper sulphate crystals contain 5 molecules of water of crystallisation.
Salts which have lost their water of crystallisation are called anhydrous salts.
Example: On strong heating, copper sulphate crystals lose all the water of crystallisation and form anhydrous copper sulphate.

(d) Copper sulphate pentahydrate salt: Its chemical formula is $CuSO_4.5H_2O$. It is blue in colour.
Iron sulphate heptahydrate salt: Its chemical formula is $FeSO_4.7H_2O$. It is green in colour.

(e) The aqueous solution of ammonium chloride salt turns blue litmus red.

OR

(a)

(i) Sulphuric acid + Zinc → Zinc sulphate + Hydrogen

$H_2SO_{4(aq)} + Zn_{(s)} \rightarrow ZnSO_{4(aq)} + H_{2(g)}$

(ii) Hydrochloric acid + Magnesium → Magnesium chloride + Hydrogen

$2HCl_{(aq)} + Mg_{(s)} \rightarrow MgCl_{2(aq)} + H_{2(g)}$

(b) A reaction in which an acid and a base react with each other to give a salt and water is termed a neutralisation reaction. In this reaction, energy is evolved in the form of heat.

(c) Uses of washing soda:

(i) Sodium carbonate (washing soda) is used in glass, soap and paper industries.

(ii) It is used in the manufacture of sodium compounds such as borax.